

***Remarks***

Reconsideration of this Application is respectfully requested. Claims 1, 13, 22-25, and 36 are currently amended and claim 12 has been canceled. Claims 37-57 have been added. No new matter has been added. Claims 1-11 and 13-57 are currently pending.

***Allowable Subject Matter***

The Applicant wishes to thank the Examiner for the indication that claim 35 is now allowable. The Applicant also wishes to commend the Examiner for providing a well-written and well-reasoned Office Action. Although we disagree with the conclusions of the Examiner, we appreciate the time and care the Examiner put into drafting the Office Action.

***Rejection Under 35 U.S.C. §112 First Paragraph***

The Office Action rejected claims 31-34 under 35 U.S.C. §112 first paragraph because the specification does not allegedly provide enablement for the cylindrical dielectric when the cell is rectangular in cross-section.

The Applicant has carefully reviewed the claims and the specification, and where appropriate, has amended the claims to provide enablement. It is respectfully submitted that the specification is now enabling and, therefore, it is respectfully requested that the rejection be withdrawn.

***Rejections Under 35 U.S.C. §102(e)***

The Office Action rejected claims 1, 2, 11, 12, 29, and 36 under 35 U.S.C. §102(e) as being allegedly anticipated by Hemingway et al. U.S. Patent No. 6,464,945 (“Hemingway”). The Applicant respectfully traverses the rejection. With respect to claim 12 being canceled, the rejection of claim 12 is now rendered moot.

Claims 1, 2, 11, 29, and 36 recite, *inter alia*, a dielectric barrier discharge plasma cell that includes a dielectric substrate with a conductive coating adapted to receive alternating current and a protective layer covering the conductive coating.

Hemingway, on the other hand, fails to disclose, teach or suggest the invention as recited by claims 1, 2, 11, 29, and 36. Rather, Hemingway discloses a non-thermal plasma reactor, which initiates NO<sub>x</sub> reduction reactions (see Abstract). The non-thermal plasma reactor includes two high dielectric plates, each plate having an electrode formed thereon (see col. 3, lines 44-55). Hemingway further discloses that the spacers separate the electrodes (see col. 3, lines 44-50). However, Hemingway fails to disclose a protective layer covering any of the electrodes. As such, Hemingway fails to disclose, teach, or suggest a protective layer covering a conductive coating, where the conductive coating is adapted to receive alternating current. Thus, the invention as recited by claims 1, 2, 11, 29, and 36 is distinguished over the prior art.

Accordingly, it is respectfully requested that the rejection be withdrawn.

***Rejections Under 35 U.S.C. §103(a)***

The Office Action rejected claims 18, 19, and 26-28 under 35 U.S.C. §103(a) as being allegedly unpatentable over Hemingway. The Applicant respectfully traverses the rejection.

Claims 18, 19, and 26-28 recite, *inter alia*, a dielectric barrier discharge plasma cell that includes a dielectric substrate with a conductive coating adapted to receive alternating current and a protective layer covering the conductive coating.

As discussed above, Hemingway fails to disclose, teach or suggest a protective layer coating the conductive layer adapted to receive alternating current voltage. Accordingly, Hemingway fails to teach or suggest the invention as recited by claims 18, 19, and 26-28.

The Office Action rejected claims 4-10 under 35 U.S.C. §103(a) as being allegedly unpatentable over Hemingway in view of Kieser et al. U.S. Patent No. 5,746,051 ("Kieser"). The Applicant respectfully traverses the rejection.

Claims 4-10 recite, *inter alia*, a dielectric barrier discharge plasma cell that includes a dielectric substrate with a conductive coating adapted to receive alternating current and a protective layer covering the conductive coating.

As discussed above, Hemingway fails to disclose, teach or suggest the claimed invention of claims 4-10. Kieser fails to correct this deficiency. Kieser, on the other hand, suggests a plasma reactor for detoxifying exhaust fumes (see, Kieser Abstract). The plasma reactor comprises of electrodes with dielectric material sandwiched between the electrodes (see, Kieser, col. 2, lines 13-18). In another embodiment, the plasma reactor comprises of ceramic plates, where each ceramic plate is coated with a metal layer serving as an electrode (see, Kieser, col. 3, lines 29-33). However, Kieser fails to disclose the user of a protective layer covering metal layer, which is formed on the ceramic plate. As such, Kieser fails to disclose, teach, or suggest the invention as recited by claims 4-10.

Since Hemingway and Kieser each fails to disclose, teach or suggest the claimed invention, the combination of Hemingway and Kieser also fails to disclose, teach, or suggest the

invention as recited by claims 4-10. Accordingly, the claims 4-10 are distinguishable over the prior art and, therefore, it is respectfully requested that the rejection be withdrawn.

The Office Action rejected claims 4-10 and 13-25 under 35 U.S.C. §103(a) as being allegedly unpatentable over Hemingway in view of Liou U.S. Patent No. 6,007,785 (“Liou”) and Racca et al. U.S. Patent No. 6,024,930 (“Racca”). The Applicant respectfully traverses the rejection.

Claims 4-10 and 13-25 recite, *inter alia*, a dielectric barrier discharge plasma cell that includes a dielectric spaced apart from said conductor, where a dielectric substrate with a conductive coating adapted to receive alternating current and a protective layer covering the conductive coating.

As discussed above, Hemingway fails to disclose, teach or suggest the claimed invention of claims 4-10 and 13-25. Liou fails to correct this deficiency. Instead, Liou teaches an ozone generating system (see Liou, Abstract). The ozone generating system comprises of electrodes with a dielectric material sandwiched between the electrodes (see, Liou, col. 3, lines 33-40). However, Liou fails to disclose, teach or suggest dielectric substrate with a conductive coating adapted to receive alternating current and a protective layer covering the conductive coating as recited by claims 4-10 and 13-25. Rather, the dielectric is not modified. As such, Liou fails to disclose, teach, or suggest the invention as claimed.

Racca also fails to disclose, teach or suggest a dielectric spaced apart from a conductor, as recited by claims 4-10 and 13-25. Racca, on the other hand, suggests an ozone generator comprising of a dielectric material with electrodes formed thereon (see, Racca, col. 2, lines 30-43). As such, Racca does not suggest spacing between the conductor and the dielectric as recited

by claims 4-10 and 13-25. Thus, Racca does not disclose, teach or suggest the claimed invention.

Since Hemingway, Liou and Racca each fails to disclose, teach or suggest the claimed invention, the combination of Hemingway, Liou and Racca also fails to disclose, teach, or suggest the invention as recited by claims 4-10 and 13-25. Accordingly, the claims 4-10 and 13-25 are distinguishable over the prior art and, therefore, it is respectfully requested that the rejection be withdrawn.

The Office Action rejected claim 30 under 35 U.S.C. §103(a) as being allegedly unpatentable over Hemingway in view of Slipiec et al. U.S. Patent No. 3,967,131 ("Slipiec"). The Applicant respectfully traverses the rejection.

Claim 30 recites, *inter alia*, a dielectric barrier discharge plasma cell that includes a dielectric spaced apart from said conductor, where a dielectric substrate with a conductive coating adapted to receive alternating current and a protective layer covering the conductive coating.

As discussed above, Hemingway fails to disclose, teach or suggest the claimed invention of claim 30. Slipiec does not correct his deficiency. Slipiec suggests an ozone-generating unit that includes three dielectric tubes and electrode assemblies (see Slipiec col. 4, lines 18-20). However, Slipiec does not disclose, teach or suggest a protective layer covering a conductive coating on the dielectric substrate. As such, Slipiec fails to disclose, teach or suggest the invention as recited by claim 30.

Since Hemingway and Slipiec each fails to disclose, teach or suggest the claimed invention, the combination of Hemingway and Slipiec also fails to disclose, teach, or suggest the

invention as recited by claim 30. Accordingly, the claim 30 is distinguishable over the prior art and, therefore, it is respectfully requested that the rejection be withdrawn.

The Office Action rejected claim 3 under 35 U.S.C. §103(a) as being allegedly unpatentable over Hemingway in view of Birmingham et al. U.S. Patent No. 4,954,320 ("Birmingham"). The Applicant respectfully traverses the rejection.

Claim 3 recites, *inter alia*, a dielectric barrier discharge plasma cell that includes a dielectric spaced apart from said conductor, where a dielectric substrate with a conductive coating adapted to receive alternating current and a protective layer covering the conductive coating.

As discussed above, Hemingway fails to disclose, teach or suggest the claimed invention of claim 3. Birmingham fails to correct this deficiency. As the Office Action points out, Birmingham suggests a device for treating gas with a transformer. However, Birmingham fails to disclose, teach, or suggest using a protective layer covering a conductive coating, where the conductive coating covers a dielectric substrate. Accordingly, Birmingham does not disclose, teach or suggest the invention as recited by claim 3.

Since Hemingway and Birmingham each fails to disclose, teach or suggest the claimed invention, the combination of Hemingway and Birmingham also fails to disclose, teach, or suggest the invention as recited by claim 3. Accordingly, the claim 3 is distinguishable over the prior art and, therefore, it is respectfully requested that the rejection be withdrawn.

Claims 37-52 recite, *inter alia*, an HVAC system integrated with a dielectric barrier discharge plasma cell. Claims 53-56 recite, *inter alia*, a plurality of dielectric barrier discharge plasma cells mounted on a mobile cart. The cited prior art does not disclose, teach or suggest the claimed invention as recited by claims 37-56. Rather, the cited prior art is directed at catalytic

converters or ozone generators. As known to those skilled in the art, catalytic converters and ozone generators are not compatible with HVAC systems of buildings or mobile carts.

Accordingly, the cited prior art is non-analogous art and should not be applied to claims 37-57.

Thus, claims 37-57 are allowable over the cited prior art.

### ***Conclusion***

All of the stated grounds of objection and rejection have been properly traversed, accommodated, or rendered moot. Applicant therefore respectfully requests that the Examiner reconsider all presently outstanding objections and rejections and that they be withdrawn. Applicant believes that a full and complete response has been made to the outstanding Office Action and, as such, the present application is in condition for allowance. If the Examiner believes, for any reason, that personal communication will expedite prosecution of this application, the Examiner is invited to telephone the undersigned at the number provided.

Prompt and favorable consideration of this Reply is respectfully requested.

Respectfully submitted,

A handwritten signature in black ink, appearing to be 'Michael J. Bell', written in a cursive style.

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